



A COMPARATIVE STUDY OF EFFECTIVENESS OF MULTIMEDIA AND TRADITIONAL METHOD FOR TEACHING BIOLOGY

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ABSTRACT

Multimedia Technology has paved the new avenues for implementation of instructional and educational ideas. It presents information in an effective way and offers opportunity to students to structure and learn exercise at their own pace. Multimedia products integrates text, pictures, sounds and full motion videos interactivity into interesting, informative and entertaining productions. It uses different ways of communication e.g. text, recorded data, numeric data, graphics, images, voice and videos. Present paper evaluates the Comparative Effectiveness of Multimedia Instructional Package and Traditional Method for teaching Biology to 9th class students. 40 Biology students of 9th class of two schools of Bhiwani District were the subjects of the study. The data collection tools were: SES Form by Dr Ashok Kalia, GGTI test of Intelligence Test by G.C. Ahuja and Achievement Test. The Topic "Tissues" was taught to the Biology students of Control Group through Traditional Method of teaching and Experimental Group through Multimedia Instructional Package. The results of t-test analysis of the Pre-test and Post test Mean Achievement test scores revealed that there was a statistically significant difference between Achievement level of Biology students of Control Group and Experimental Group. The findings of the study suggest that Multimedia Instructional Package could be considered as a better alternative to Traditional method for teaching Biology.

KEY POINTS: Multimedia Instructional Package, Biology, Traditional Method, Effectiveness, Academic Achievement.

MULTIMEDIA INSTRUCTION:

Multimedia products integrates text, pictures, sounds and full motion videos interactivity into interesting, informative and entertaining productions. It uses different ways of communication e.g. text, recorded data, numeric data, graphics, images, voice and videos. Multimedia technology has a tremendous impact on representing and imparting information. It has taken computer users to high technology desktop systems that offer fun adventure and interactive learning. Multimedia products are complementary to the teaching-learning process as they assist the teachers in the better communication of the content. These provide learning information to teacher, student and scholars in a newly engaging and meaningful way. Multimedia technology overcomes the limitations in science classrooms by enabling the investigations of phenomenon that would otherwise be too expensive, time consuming and risky.

RATIONALE OF THE STUDY:

Now a day's teachers are struggling with lack of systematic method of teaching specially subject like Biology. There should be a sincere attempt to change the way of presentation of information in teaching Biology. It has become imperative to plan proper strategies to improve the competency of Biology students. Due to the presence of individual differences among students using same strategy of teaching to teach all students do not suit to their level of understanding and attitudes. Teachers have to adopt new strategy to impart learning to students. Considering the demands of 21 century's "A tolerant approach in the education of Biology teaching is the need of today." The rise of Information and communication technology has brought drastic changes in imparting knowledge. Multimedia Technology has paved the new avenues for implementation of instructional and educational ideas. Multimedia products are complementary to the teaching-learning process as they assist the teachers in the better communication of the content. The present study tends to examine how the use of modern instruction techniques like Packages, would help to boost the Achievement and Interest of students in biology.

OBJECTIVES OF THE STUDY:

1. To compare the Pre-test and Post test Mean Achievement Scores of Biology Students of Control Group.
2. To compare the Pre-test and Post-test Mean Achievement Scores of Biology students of Experimental Group.
3. To compare the Post-test Mean Achievement Scores of Biology students of Control Group and Experimental Group.

HYPOTHESES OF THE STUDY:

In the present study the researcher tested the following hypotheses:

H01 There exists no significant difference in Pre-test and Post test Mean Achievement Scores of Biology Students of Control Group.

H02 There exists no significant difference in Pre-test and Post-test Mean Achievement Scores of Biology students of Experimental Group.

H03 There exists no significant difference Post-test Mean Achievement Scores of Biology students of Control Group and Experimental Group.

Sample:

Sample of the 40 Biology students of 9th class was selected purposively from the two schools of Bhiwani District. 40 Biology students belonging to Middle class in S.E.S. and having Average level of Intelligence were selected as the subjects of the study. Control Group was comprised of 20 Biology students who were taught through Traditional Method of teaching and Experimental Group was comprised of 20 Students who were taught through Multimedia Instructional Package.

Design:

In the present study Pre-test and Post-test Quasi Experimental Design was employed on a purposive sample of 40 Biology students of two schools of Bhiwani District.

Tools used:

1. The Urban form of Socio-Economic Scale by Dr. Ashok Kalia and Sudhir sahu was used to determine the Socio-Economic Status of the students.
2. Group Test of Intelligence (GGTI) by G. C. Ahuja was used by the researcher for selecting students of intended I.Q. level.
3. A self constructed Achievement Test for Pre-Test and Post test to assess the Achievement of Biology Students of 9th grade on the topic Tissues.

Analysis and Interpretation of Data:

The data collected from the sample of the study was organized and tabulated to facilitate application of appropriate statistical technique for the purpose of its analysis. Score were compiled, Mean, Standard Deviation was computed for table, 't' test was chosen because researcher wished to test null hypothesis. True level of significance was considered, i.e. 0.01 level of significance as arbitrary standard for accepting or rejecting null hypothesis.

Objective: 1

To compare the Pre-test and Post test Mean Achievement Scores of Biology Students of Control Group.

Hypothesis H01:

There exists no significant difference in the Pre-test and Post-test Mean Achievement Scores of Biology Students of Control Group.

Table: 1

Control Group Scores	No. of students	Mean	SD	SED	t-test value	Level of significance
Pre test (X_1)	20	12	3.13	0.98	25.51	Significant at the 0.01 level of significance.
Post test (Y_1)	20	37	3.08			

Table 1 shows that the Mean values of Pre-test and Post test Mean Achievement test scores of Biology students of Control Group are found to be 12 and 37 respectively. The computed values of standard deviation of Pre test and Post test Mean Achievement test scores of Control Group are 3.13 and 3.08 respectively. The obtained 't'-value is 25.51 which is found significant at 0.01 level of significance. Thus the hypothesis H01 "There exists no significant difference in the Pre-test and Post-test Mean Achievement Scores of Biology Students of Control Group" is rejected. It means there is significant difference between Pre-test and Post-test scores of Biology students of Control Group in respect of their Mean Achievement scores after the experimental treatment.

Objective: 2

To compare the Pre-test and Post-test Mean Achievement Scores of Biology Students of Experimental Group.

Hypothesis H02:

There exists no significant difference in the Pre-test and Post-test Mean Achievement Scores of Biology Students of Experimental Group.

Table: 2

Experimental Group Scores	No. of students	Mean	SD	SED	t-test value	Level of significance
Pre test (X_1)	20	13	3.32	1.12	38.39	Significant at the 0.01 level of significance.
Post test (Y_2)	20	56	3.80			

Table 2 shows that the Mean values of Pre-test and Post test Mean Achievement test scores of Biology students of Experimental Group are found to be 13 and 56 respectively. The computed values of standard deviation of Pre test and Post test Mean Achievement test scores of Experimental Group are 3.32 and 3.80 respectively. The obtained 't'-value is 38.39 which is found significant at 0.01 level of significance. Thus the hypothesis H02 "There exists no significant difference in the Pre-test and Post-test Mean Achievement Scores of Biology Students of Experimental Group" is rejected. It means there is significant difference between Pre-test and Post-test scores of Biology students of Experimental Group in respect of their Mean Achievement scores after the experimental treatment.

Objective: 3

To compare the Post-test Mean Achievement Scores of Biology Students of Control Group and Experimental Group.

Hypothesis:

H03 There exists no significant difference in the Pre-test and Post-test Mean Achievement Scores of Biology Students of Control Group and Experimental Group.

Table: 3

Control Group (Y_1) And Experimental Group (Y_2) Scores	No. of students	Mean	SD	SED	t-test value	Level of signification
Post-test (Y_1)	20	37	3.08	1.05	17.43	Significant at the 0.01 level of significance.
Post-test (Y_2)	20	56	3.80			

Table 3 shows that Mean values of Post-test of Control Group and Experimental Group are 37 and 56 respectively. The Computed values of standard deviation of Post-test of Control Group and Experimental Group are 3.08 and 3.80 respectively. The obtained 't'-value is 17.43 which is significant at 0.01 level of significance. Thus the hypothesis H03 "There exists no significant difference in the Post-test Mean Achievement Scores of Biology Students of Control Group and Experimental Group" is rejected. It means that there is significant difference between Biology students of Control Group and Experimental Group in respect of their achievement scores after the experimental treatment.

FINDINGS OF THE STUDY:

Following are the findings of the study:

1. Significant difference was found in the Pre-test and Post -test Mean Achievement scores of Biology students of Control Group after the experimental treatment. From the above given finding we can infer that Traditional method of teaching was found effective with respect to Academic Achievement in Biology.
2. Significant difference was found in the Pre-test and Post-test Mean Achievement scores of Biology students of Experimental Group at after the experimental treatment. From the above given finding we can infer that Multimedia Instructional Package was found effective with respect to Academic Achievement in Biology.

3. A significant difference was found on Post-test Mean Achievement scores of Biology students of Control Group and Experimental Group elucidating that experimental treatment yielded significant difference in Post-test Mean Achievement scores of Biology students. From the above given finding we can infer that Biology students of Experimental Group who were taught through Multimedia Instructional Package exhibited better achievement in Biology as compared Control Group who were taught through Traditional Method.

DISCUSSION OF THE RESULTS:

Several studies has been conducted on Multimedia. Majority of them have concluded that students taught through Multimedia Instructions learn and achieve more than other instruction methods or strategies. The Biology students of Experimental Group who were taught through Multimedia Instruction Package achieved more than those Control Group who were taught through Traditional Method of Teaching. Desai (2004) in his study found that the mean Achievement of the students who were taught Home Science with Multimedia was significantly higher than who were taught with traditional method. Nimavathi and Gnanadevan (2008) found that students learning with the help of Multimedia Programme performed better in science. Meenu (2009) in her study found that the students who were taught English through Multimedia Teaching Programme have shown significant improvement in their achievement in English than the students who received instruction through traditional method.

CONCLUSION:

From the findings of the study we conclude that Biology students of Experimental Group who were taught through Multimedia Instructional Package exhibited better achievement in Biology as compared Control Group who were taught through Traditional method of teaching. The Multimedia Instructional Package was found more effective as compared to Traditional Method for teaching Biology students of 9th class. This implies that Experimental treatment of three weeks yielded difference in Post-test Mean Achievement test scores of the Biology students of 9th class. It may be concluded that Multimedia Instructional Package contributed in raising the Achievement of Biology Students. On the basis of the results of the study we can claim that if Multimedia Instructional Packages can be used for teaching students as it enhance their academic achievement is the best technique to increase students' achievement, interest and active participation in class room teaching learning.

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